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1 UNITED STATES PATENT AND TRADEMARK OFFICE

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4 BEFORE THE BOARD OF PATENT APPEALS
5 AND INTERFERENCES
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8 *Ex parte* TESSEI SHIMIZU
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11 Appeal 2008-4092
12 Application 10/698,394
13 Technology Center 3600
14

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16 Decided: October 15, 2008
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19 *Before:* WILLIAM F. PATE, III, JENNIFER D. BAHR, and FRED A.
20 SILVERBERG, *Administrative Patent Judges.*

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22 SILVERBERG, *Administrative Patent Judge.*
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25 DECISION ON APPEAL
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28 STATEMENT OF THE CASE

29 Appellant appeals under 35 U.S.C. § 134 (2002) from a Final Office
Action of claims 1-4. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

SUMMARY OF DECISION

We AFFIRM.

THE INVENTION

The Appellant's claimed invention is to a system and a method for encouraging energy-saving driving in an environmentally friendly way by acquiring information from a vehicle, analyzing the information and providing comments to a user based on the analyzed information (e.g., how to reduce emissions). Claim 1, reproduced below, is representative of the subject matter on appeal.

1. An Eco-Driving diagnostic system comprising:
 - a vehicle;
 - a center;
 - a user terminal;
 - a network; and
 - a radio communication network; wherein:
 - the vehicle includes a vehicle sensor, an in-vehicle device, a radio communication terminal, wherein:
 - the in-vehicle device acquires information about at least the number of engine revolutions, fuel consumption, vehicle speeds, vehicle positional information and time information from the vehicle sensor, and temporarily processes the acquired data for subsequent use; and
 - the radio communication terminal transmits the information to the center via the radio communication network, and receives information from the center;
 - the center includes a communication control device, a management server, a database, a mail server, and a Web server, wherein:
 - the communication control device in the center transmits and receives the information to and from the radio communication terminal in the vehicle;
 - the management server:
 - manages the information transmitted from the vehicle;

calculates, on the basis of the managed
information, at least fuel consumption and
environmental-load emissions with respect to each of
events which may occur and corresponding to a total of
events over a total driving time of the vehicle;
stores in the database the calculated information
with user information;
retrieves the information stored in the database;
processes the retrieved information into contents
for diagnosis and advices by combining and comparing
the information;
provides the contents from the mail server to the
user terminal via the network;
and
provides the contents from the Web server to the
user terminal via the network;
and
the user terminal:
is a mobile terminal or a personal computer;
sets up at least personal information, timing of
providing the contents, and detail of the contents;
displays the contents; and
informs with sound.

THE REJECTIONS

The Examiner relies upon the following as evidence of
unpatentability:

Satoshi	JP 2002-089349	Mar. 27, 2002
Riu	JP 2002-19755	Dec. 7, 2002
Lightner	US 6,636,790 B1	Oct. 21, 2003
Kapolka	US 6,714,857 B2	Mar. 30, 2004

The following rejections are before us for review:

1. Claims 1, 2, and 4 are rejected under 35 U.S.C. § 103(a) as being
unpatentable over Kapolka in view of Riu and Lightner.

2. Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kapolka in view of Riu, Lightner, and Satoshi.

ISSUES

The issues before us are whether the Appellant has shown that the Examiner erred in rejecting claims 1, 2, and 4 over Kapolka in view of Riu and Lightner, and claim 3 over Kapolka in view of Riu, Lightner, and Satoshi. These issues turn on whether: (1) the Examiner has failed to articulate a reason with rational underpinning to combine the teachings of Kapolka, Riu, and Lightner (claims 1, 2, and 4), and in addition Satoshi (claim 3); and (2) the Examiner has failed to identify art, even when the references are combined, that teaches or suggests all of the limitations of the independent claims.

FINDINGS OF FACT

We find that the following enumerated findings are supported by at least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Office).

1. The Appellant's Specification discloses an in-vehicle device 102 that acquires various types of information, e.g., engine revolutions, fuel consumptions, vehicle speeds, vehicle positional information, time information from a car sensor 101 (Spec. pp. 12, ll. 26-30 and p. 15, l. 5-10), a radio communication terminal 103 that transmits the information to a remote location for calculating fuel consumption and emissions with respect to multiple events and for

- 1 the driving time of a vehicle, and offering advices on the basis of
2 combination and comparison of the information (Spec. p. 13, I. 20
3 and p. 15, II. 7-10).
- 4 2. Kapolka discloses gathering information and transmitting the
5 information to a remote location for processing and evaluation for
6 fuel tax purposes comprising a vehicle 105 using a communication
7 link available in the vehicle.
- 8 3. Kapolka's communication link also provides a single access point
9 for diagnostic analysis of the components on the vehicle (col. 4, II.
10 59-67).
- 11 4. In Kapolka, the remote processing includes a management server
12 for managing the information transmitted from the vehicle by: (1)
13 calculating the vehicle's location, bearing, fuel levels, total fuel
14 used, total idle fuel used, and (2) route traveled to determine if any
15 jurisdictional boundaries were crossed; (3) calculating the mileage
16 driven in each jurisdiction to compute the fuel used in each
17 jurisdiction (col. 6, II. 29-63 and col. 7, II. 34-58); (4) storing the
18 information (col. 7, I. 55); and (5) providing the information to a
19 user's terminal via a web server (col. 7, II. 55-58 and col. 4, II. 45-
20 50).
- 21 5. Riu discloses an environmental load total amount monitoring
22 system that remotely monitors emissions emitted from a user's
23 moving vehicles against a total amount allotted to a user by
24 utilizing a rotational frequency test to measure engine speed (pp.
25 0012 and 0027) and a gas analyzer to measure the discharge

- 1 concentration of the exhaust gas discharged through an exhaust
2 pipe (p. 0012).
- 3 6. Riu's monitoring system records information regarding the
4 discharge concentration of the emissions (p. 0012) and computes
5 the discharge of the emissions by each vehicle by analyzing the
6 recorded information using a formula (p. 0030).
- 7 7. Riu's monitoring system (1) determines when the emissions are
8 below the allotted amount to create a surplus and enable a person
9 to sell the surplus emissions (abstract; pp. 0027 and 0029), (2)
10 stores calculated information in a database (pp. 0020; 0036), and
11 (3) retrieves and processes the information (p. 0043).
- 12 8. Lightner discloses a wireless diagnostic system and method for
13 remotely characterizing a vehicle's performance by generating
14 information of the vehicle's performance; using and analyzing the
15 generated information to characterize driving patterns (e.g., vehicle
16 speed, emission characteristics and vehicle location) (col. 4, ll. 52-
17 61) by processing the information (col. 3, ll. 6-21, ll. 35-50; and
18 col. 4, ll. 52-59); and displaying the processed information (col. 8,
19 ll. 56-67).
- 20 9. Lightner further discloses that the information generated can be
21 compared with a predetermined value (col. 3, ll. 44-47).
- 22 10. Satoshi discloses remotely evaluating fuel consumption of vehicles
23 by comparing generated information against known variables
24 written to a memory card (pp. 0039 and 0046) and informing an
25 operator when fuel consumption worsens (i.e., sudden braking and

sudden accelerating) (pp. 0005 and 0023) by emitting a warning to an operator (pp. 0026, 0094, 0096, and 0097).

11. Satoshi discloses displaying to an operator the calculated fuel consumption (p. 0023).

12. The Appellant's Specification discloses that the events for calculating fuel consumption and emissions are idling, rapid and sudden acceleration, engine racing, constant-speed driving and the like (Spec. p. 2, ll. 17-19).

13. Kapolka discloses calculating fuel consumption for three events: an idling event - when the vehicle is idling (col. 10, ll. 31-53 and col. 11, ll. 7-10), a running event - when the vehicle is running (col. 7, ll. 39-49 and 66-67), and a border event - when the vehicle crosses a jurisdiction (Figure 10, col. 6, l. 63, col. 7, ll. 26-33 and ll. 34-58).

PRINCIPLES OF LAW

Appellant has the burden on appeal to the Board to demonstrate error in the Examiner's position. *See In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) ("On appeal to the Board, an applicant can overcome a rejection [under § 103] by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.") (Quoting *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)).

"Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). See also *KSR*, 127 S.Ct. at 1734 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”)

In *KSR*, the Supreme Court emphasized “the need for caution in granting a patent based on the combination of elements found in the prior art,” *id.* at 1739, and discussed circumstances in which a patent might be determined to be obvious. In particular, the Supreme Court emphasized that “the principles laid down in *Graham* reaffirmed the ‘functional approach’ of *Hotchkiss*, 11 How. 248.” *KSR*, 127 S.Ct. at 1739 (citing *Graham*, 383 U.S. at 12), and reaffirmed principles based on its precedent that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* The Court explained:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in

the same way, using the technique is obvious
unless its actual application is beyond his or her
skill.

Id. at 1740. The operative question in this “functional approach” is thus
“whether the improvement is more than the predictable use of prior art
elements according to their established functions.” *Id.*

The Supreme Court stated that there are “[t]hree cases decided after
Graham [that] illustrate the application of this doctrine.” *Id.* at 1739. “In
United States v. Adams, ... [t]he Court recognized that when a patent claims
a structure already known in the prior art that is altered by the mere
substitution of one element for another known in the field, the combination
must do more than yield a predictable result.” *Id.* at 1739-40. “*Sakraida*
and *Anderson’s-Black Rock* are illustrative – a court must ask whether the
improvement is more than the predictable use of prior art elements according
to their established function.” *Id.* at 1740.

The Supreme Court stated that “[f]ollowing these principles may be
more difficult in other cases than it is here because the claimed subject
matter may involve more than the simple substitution of one known element
for another or the mere application of a known technique to a piece of prior
art ready for the improvement.” *Id.* The Court explained:

Often, it will be necessary for a court to look to
interrelated teachings of multiple patents; the
effects of demands known to the design
community or present in the marketplace; and the
background knowledge possessed by a person
having ordinary skill in the art, all in order to
determine whether there was an apparent reason to
combine the known elements in the fashion
claimed by the patent at issue.

1 *Id.* at 1740-41. The Court noted that “[t]o facilitate review, this analysis
2 should be made explicit.” *Id.* (citing *In re Kahn*, 441 F.3d 977, 988 (Fed.
3 Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by
4 mere conclusory statements; instead, there must be some articulated
5 reasoning with some rational underpinning to support the legal conclusion of
6 obviousness”)). However, “the analysis need not seek out precise teachings
7 directed to the specific subject matter of the challenged claim, for a court
8 can take account of the inferences and creative steps that a person of
9 ordinary skill in the art would employ.” *Id.*

10 The Federal Circuit recently concluded that it would have been
11 obvious to combine (1) a mechanical device for actuating a phonograph to
12 play back sounds associated with a letter in a word on a puzzle piece with
13 (2) an electronic, processor-driven device capable of playing the sound
14 associated with a first letter of a word in a book. *Leapfrog Ent., Inc. v.*
15 *Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007) (“[a]ccommodating
16 a prior art mechanical device that accomplishes [a desired] goal to modern
17 electronics would have been reasonably obvious to one of ordinary skill in
18 designing children’s learning devices”). In reaching that conclusion, the
19 Federal Circuit recognized that “[a]n obviousness determination is not the
20 result of a rigid formula disassociated from the consideration of the facts of a
21 case. Indeed, the common sense of those skilled in the art demonstrates why
22 some combinations would have been obvious where others would not.” *Id.*
23 at 1161 (citing *KSR*, 127 S.Ct. 1727, 1739 (“The combination of familiar
24 elements according to known methods is likely to be obvious when it does
25 no more than yield predictable results.”)). The Federal Circuit relied in part
26 on the fact that Leapfrog had presented no evidence that the inclusion of a

1 reader in the combined device was “uniquely challenging or difficult for one
2 of ordinary skill in the art” or “represented an unobvious step over the prior
3 art.” *Id.* (citing *KSR*, 127 S.Ct. at 1740-41).

4
5 ANALYSIS

6 Appellant argues claims 1, 2, and 4 as a group. As such, we select
7 claim 1 as representative of the group, and claims 2 and 4 will stand or fall
8 with claim 1. 37 C.F.R. § 41.37(c)(1)(vii) (2007). The Appellant argues
9 claim 3 separately.

10 Kapolka, Riu, Lightner, and Satoshi disclose collecting information
11 from a vehicle and transmitting the information to a remote location for
12 processing and evaluation. Kapolka discloses using an available
13 communication link for collecting the information and providing a single
14 access point for diagnostic analysis of the components on the vehicle (col. 4,
15 ll. 59-67) (Fact 3). Kapolka differs from the claimed subject matter in that
16 Kapolka transmits information relevant to fuel tax collection rather than the
17 number of engine revolutions, fuel consumption, vehicle speeds, vehicle
18 positional information and time information from the vehicle sensor as
19 called for in claim 1. We conclude that with all the information available at
20 Kapolka’s communication link, it would have been obvious to a person
21 having ordinary skill in the art that the particular information transmitted to
22 the remote location could vary as the need arises. Riu, Lightner, and Satoshi
23 disclose that it is old and well known in the art to collect different kinds of
24 information. Riu discloses monitoring remotely emissions emitted from a
25 user’s moving vehicles against a total amount allotted to the user (Fact 5),
26 and recording information regarding the discharge concentration of the

emissions (p. 0012) and computing the discharge of the emissions by each vehicle by analyzing the recorded information using a formula (p. 0030) (Fact 6). Lightner discloses that information generated can be compared with a predetermined value (col. 3, ll. 44-47) (Fact 9). Regarding claim 3, Satoshi discloses informing an operator when fuel consumption worsens (i.e., sudden braking and sudden accelerating) by emitting a warning to an operator (Fact 10) and displaying to an operator the calculated fuel consumption (p.0023) (Fact 11). As such, we conclude that to combine the teachings of Kapolka, Riu, and Lightner (claims 1, 2 and 4), and in addition Satoshi (claim 3) as set forth by the Examiner (Ans. 3-6) would have been obvious at the time the invention was made to a person having ordinary skill in the art. In *KSR* the Supreme Court held that if a technique has been used to improve one device and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious. *See KSR* at 1740.

Appellant argues that the Examiner has failed to provide motivation to combine the teachings of Kapolka, Riu, Lightner in rejecting claim 1 (Amended Br. 10-11) and the teachings of Kapolka, Riu, Lightner and Satoshi in rejecting claim 3, that is, there is no motivation in the prior art that would cause a person having ordinary skill in the art to make the proposed combination of references (Amended Br. 12). However, in *KSR* the Supreme Court held that a rigid application of such a mandatory formula as TSM [teaching, suggestion or motivation] was incompatible with its precedent concerning obviousness. *See KSR* at 1741.

Appellant further argues that the references even when combined do not teach multiple events, as Kapolka only deals with a single event

(Amended Br. 7 and 8). We agree with the Examiner (Ans. 7) as we also find that Kapolka discloses calculating fuel consumption for three events: an idling event, a running event, and a border event (Fact 13).

Appellant still further argues that in Kapolka a calculation is based upon a single event (idling) and not over a total driving time as recited in claim 1 (Amended Br. 9). Kapolka (Figure 10, col. 6, l. 63, col. 7, ll. 26-33 and ll. 34-58) teaches determining if a vehicle crosses a jurisdiction border (the border event) (Fact 13), and then calculating the fuel consumption for the running event (col. 7, ll. 39-49 and 66-67) and idling event (col. 10, ll. 31-53 and col. 11, ll. 7-10) for each jurisdiction the vehicle has traveled. Kapolka encompasses calculating the fuel consumption in each event over a total driving time as called for in the claim because the claim does not indicate how much time the total driving time limitation called for in the claim includes, and Kapolka does not limit the size of a jurisdiction. If in Kapolka, the jurisdiction is defined as the whole area of a country, a vehicle that completed a trip within the country would calculate the fuel consumption for running and idling events over a total driving time of the vehicle. We agree with the Examiner's analysis (Ans. 7 and 8) as the set time period for monitoring consumption or the size of a particular jurisdiction would not appear to add patentable significance.

CONCLUSION OF LAW

We conclude that the Appellant has not shown that the Examiner erred in rejecting claims 1, 2, and 4 under 35 U.S.C. § 103(a) as being unpatentable over Kapolka in view of Riu and Lightner. We conclude that the Appellant has not shown that the Examiner erred in rejecting claim 3

under 35 U.S.C. § 103(a) as being unpatentable over Kapolka in view of
Riu, Lightner, and Satoshi.

DECISION

The decision of the Examiner to reject claims 1-4 is affirmed.

No time period for taking any subsequent action in connection with
this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

hh

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